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805 Third Avenue
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EXAMINER

NOGUEROLA, ALEXANDER STEPHAN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/021,850

Applicant(s)

QUAKE ET AL.

Examiner

ALEX NOGUEROLA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21-24 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/13/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Double Patenting Rejections Based on US 6,221,654 B1

2. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5 and 22 or the combination of claims 5 and 23 of U.S. Patent No. 6,221,654 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the combination of claims 5 and 22 and the combination of claims 5 and 23 meet all of the limitations of claim 1 of the instant application.

3. Claim 2 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5, 14, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 2 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 14 provides the additional limitation required by claim 2.

4. Claim 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5, 19, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 3 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 19 essentially provides the additional limitation required by claim 2.

5. Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5, 19, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 4 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 19 essentially provides the additional limitation required by claim 4. It would have been obvious to one with ordinary skill in the art at the time of the invention to place the valve downstream of the branch point because if it is placed upstream of the branch point and closed than sample can not enter any of the branches of the branch point; that is, if the valve is placed

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upstream of the branch point it will not be effective to allow or curtail flow through a particular channel.

6. Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5, 15, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 5 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 15 essentially provides the additional limitation required by claim 5.

7. Claim 6 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 2, 5, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 6 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 2 provides the additional limitation required by claim 6.

8. Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 5, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 7 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 3 provides the additional limitation required by claim 7.

9. Claim 8 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 4, 5, and 22 of U.S. Patent No. 6,221,654 B1 in view of Pace (US 4,908,112). Claim 1, from which claim 8 depends, has been addressed above. The combination of claims 4, 5, and 22 meets all of the limitations of claim 8 except that it does not mention a glass cover slip, only a transparent cover slip. However, using a glass cover slip to cover a microfluidic substrate was common at the time of the invention. Pace is one example of such a use of a glass cover slip. See the abstract; Figure 6; and col. 6, ll. 46-55. It would have been obvious to one with ordinary skill in the art at the time of the invention to use a glass cover as taught by Pace (who also teaches bonding the cover slip to the substrate) in the invention of the combination of claims 4, 5, and 22 because this will allow optical monitoring of the sample. See in Pace Figures 5 and 6 and col. 5, ll. 60-66.

10. Claim 9 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 2, 4-6, and 22 of U.S. Patent No. 6,221,654 B1. Claim 1, from which claim 9 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 6 essentially provides the additional limitation required by claim 9. It would have been obvious to one with ordinary skill in the art at the time of the invention to also have the microscope hold the device because the device is small and thin (preamble to claim 1 and claim 2) and in fact can be covered by a cover slip (claim 4), which one with ordinary skill in the art would understand to mean a microscope slide cover slip.

11. Claim 10 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 5, 9, and 22 of U.S. Patent No. 6,221,654 B1 in view of the CAPLUS abstract of Kawazumi et al. ("Laser fluorometry using a visible semiconductor laser and an avalanche photodiode for capillary electrophoresis," *Analytical Sciences* (1995), 11(4), 587-90) ("Kawazumi"). Claim 1, from which claim 10 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 9 essentially provides the additional limitation required by claim 10. The claims of U.S. Patent No. 6,221,654 B1 does not mention a semiconductor laser, claim 9 only requires a laser. Kawazumi teaches using a semiconductor laser for optical detection in capillary electrophoresis systems. See the abstract. It would have been obvious to one with ordinary skill in the art at the time of the invention to use a semiconductor laser and photodiode as taught by Kawazumi in the invention of the combination of claims 5, 9, and 22 of U.S. Patent No. 6,221,654 B1 because as taught by Kawazumi "[t]hese solid-state devices offer both reliability and compactness for instrumental design." The detection limit is also "comparable to that of the conventional laser fluorometry system with a gas laser and a photomultiplier."

12. Claim 11 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 13 of U.S. Patent No. 6,221,654 B1. Although the conflicting claims are not identical, they are not patentably distinct

from each other because (a) performing the method of claim 11 is essentially using the device of the combination of claims 3 and 13 as intended, and (b) it would have been obvious to one with ordinary skill in the art at the time of the invention to collect polynucleotides diverted into the first branch channel because the flow control unit is configured to selectively direct the polynucleotides to a branch channel and if the polynucleotides so directed are collected than they can be further analysed or used in synthesis, such as PCR.

13. Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 13 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 12 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 3 requires the detection region to have a volume of between about 1 femtoliter and 1 picoliter, thus it would have been obvious to have the polynucleotide concentration on the order of fM or pM. Barring a contrary showing, such as unexpected results, a choice of polynucleotide concentration of about 100 fM or 100pM is arbitrary.

14. Claim 13 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 13 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 13 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because

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claim 3 requires the detection region to have a volume of between about 3 femtoliter and 1 picoliter.

15. Claim 14 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 13, and 16 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 14 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 16 requires that the detector be an optical detector and quantitating the optical signal as claimed is then implied because claim 13 requires "each polynucleotide to be directed to a selected branch channel based on a measured level of reporter corresponding to the size of the polynucleotide molecule."

16. Claim 15 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 6, 13, and 16 of U.S. Patent No. 6,221,654 B1. Claim 14, from which claim 15 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 6 requires a fluorescence microscope and a fluorescent reporter.

17. Claim 16 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 6, 12, 13, and 16 of U.S. Patent No. 6,221,654 B1. Claim 15, from which claim 16 depends, has been addressed above.

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Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 12 requires a optical reporter as claimed.

18. Claim 17 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 13 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 17 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 3 and 13 require “a flow control responsive to the detector and acting to direct each polynucleotide molecules at the discrimination region into a selected branch channel.”

19. Claim 18 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 13, and 15 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 18 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 15 requires the flow control to comprise “a pressure differential, and wherein the flow of polynucleotide molecules is directed by adjusting the pressure at the outlet of each branch channel to allow or curtail flow through the channel [emphasis added].”

20. Claim 19 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 13, and 15 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 19 depends, has been addressed above. Although the

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conflicting claims are not identical, they are not patentably distinct from each other because claim 15 requires the flow control to comprise “a pressure differential, and wherein the flow of polynucleotide molecules is directed by adjusting the pressure at the outlet of each branch channel to allow or curtail flow through the channel [emphasis added].”

21. Claims 22-23 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 13 of U.S. Patent No. 6,221,654 B1. Claim 11, from which claim 22 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because barring a showing to the contrary, such as unexpected results, the size of the polynucleotide is arbitrary or will just depend on the sample, especially since such large size ranges are claimed.

Double Patenting Rejections Based on US 6,344,325 B1

22. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,344,325 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 meets all of the limitations of claim 1 of the instant application.

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23. Claim 2 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 2 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 18 provides the additional limitation required by claim 2.

24. Claim 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 23 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 3 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 23 essentially provides the additional limitation required by claim 3.

25. Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 24 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 4 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 24 essentially provides the additional limitation required by claim 4. It would have been obvious to one with ordinary skill in the art at the time of the invention to place the valve downstream of the branch point because if it is placed upstream of the branch point and closed then sample can not enter any of the branches of the branch point; that is, if the valve is placed upstream of the branch point it will not be effective to allow or curtail flow through a particular channel.

26. Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 5 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 19 essentially provides the additional limitation required by claim 5.

27. Claim 6 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 6 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 3 requires the detection region to have a volume of between about 1 fl and about 1 pl. This shows that the very small channel dimensions were contemplated, since the detection region is in the main channel. Barring a contrary showing, such as unexpected results, channel dimensions within the claimed ranges are just a matter of scaling the channel to the expected sample or analyte volume.

28. Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 7 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 3 provides the additional limitation required by claim 7.

29. Claim 8 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of U.S. Patent No. 6,344,325 B1 in view of Pace (US 4,908,112). Claim 1, from which claim 8 depends, has been addressed above. Claim 9 meets all of the limitations of claim 8 except that it does not mention a glass cover slip, only a transparent cover slip. However, using a glass cover slip to cover a microfluidic substrate was common at the time of the invention. Pace is one example of such a use of a glass cover slip. See the abstract; Figure 6; and col. 6, ll. 46-55. It would have been obvious to one with ordinary skill in the art at the time of the invention to use a glass cover as taught by Pace (who also teaches bonding the cover slip to the substrate) in the invention of claim 8 because this will allow optical monitoring of the sample. See in Pace Figures 5 and 6 and col. 5, ll. 60-66.

30. Claim 9 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 2 and 11 of U.S. Patent No. 6,344,325 B1. Claim 1, from which claim 9 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 11 essentially provides the additional limitation required by claim 9. It would have been obvious to one with ordinary skill in the art at the time of the invention to also have the microscope hold the device because the device is small and thin (preamble to claim 1 and claim

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2) and in fact can be covered by a cover slip (claim 11), which one with ordinary skill in the art would understand to mean a microscope slide cover slip.

31. Claim 10 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claim 14 of U.S. Patent No. 6,344,325 B1 in view of the CAPLUS abstract of Kawazumi et al. ("Laser fluorometry using a visible semiconductor laser and an avalanche photodiode for capillary electrophoresis," *Analytical Sciences* (1995), 11(4), 587-90) ("Kawazumi"). Claim 1, from which claim 10 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 14 essentially provides the additional limitation required by claim 10. The claims of U.S. Patent No. 6,344,325 B1 does not mention a semiconductor laser, claim 14 only requires a laser. Kawazumi teaches using a semiconductor laser for optical detection in capillary electrophoresis systems. See the abstract. It would have been obvious to one with ordinary skill in the art at the time of the invention to use a semiconductor laser and photodiode as taught by Kawazumi in the invention of claim 14 of U.S. Patent No. 6,344,325 B1 because as taught by Kawazumi "[t]hese solid-state devices offer both reliability and compactness for instrumental design." The detection limit is also "comparable to that of the conventional laser fluorometry system with a gas laser and a photomultiplier."

32. Claim 11 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,344,325 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 3 essentially meets all of the limitations of claim 11 of the instant application.

33. Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 2 and 3 of U.S. Patent No. 6,344,325 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because the combination of claims 2 and 3 essentially meets all of the limitations of claim 12 of the instant application.

34. Claim 13 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 2 and 3 of U.S. Patent No. 6,344,325 B1. Claim 11, from which claim 13 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 2 requires the detection region to have a volume of between about 3 femtoliter and 1 picoliter.

35. Claim 14 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 4 of U.S. Patent No.

6,344,325 B1. Claim 11, from which claim 14 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 4 provides the additional limitation required by claim 14.

36. Claim 15 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 4, and 11 of U.S. Patent No.

6,344,325 B1. Claim 14, from which claim 15 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because because claim 11 requires a fluorescence microscope and a fluorescent reporter.

37. Claim 16 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3, 4, and 17 of U.S. Patent No.

6,344,325 B1. Claim 15, from which claim 16 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 17 requires an optical reporter as claimed.

38. Claim 17 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claim 3 of U.S. Patent No. 6,344,325

B1. Claim 11, from which claim 17 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claim 1 requires "directing polynucleotide molecules in the flow that have a selected size into a branch channel originating at the branch point discrimination region."

39. Claim 18 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 19 of U.S. Patent No.

6,344,325 B1. Claim 11, from which claim 18 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 19 requires the flow control to comprise "a pressure differential, and wherein the flow of polynucleotide molecules is directed by adjusting the pressure at the outlet of each branch channel to allow or curtain [sic] flow through the channel [emphasis added]."

40. Claim 19 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 19 of U.S. Patent No.

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6,344,325 B1. Claim 11, from which claim 19 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 19 requires the flow control to comprise "a pressure differential, and wherein the flow of polynucleotide molecules is directed by adjusting the pressure at the outlet of each branch channel to allow or curtain [sic] flow through the channel [emphasis added]."

41. Claim 21 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 6 of U.S. Patent No.

6,344,325 B1. Claim 11, from which claim 21 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 6 provides the size range required by claim 21.

42. Claim 22 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 7 of U.S. Patent No.

6,344,325 B1. Claim 21, from which claim 22 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 7 provides the size range required by claim 22.

43. Claim 23 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 8 of U.S. Patent No. 6,344,325 B1. Claim 22, from which claim 23 depends, has been addressed above. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 8 provides the size range required by claim 23.

44. Claim 24 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the combination of claims 3 and 4 of U.S. Patent No. 6,221,654 B1. Although the conflicting claims are not identical, they are not patentably distinct from each other because performing the method of claims 3 and 4 would involve performing the method of claim 24.

Claim Rejections - 35 USC § 112

45. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

a) Claim 15 recites the limitation "said optical signal from an optical signal" in lines 1-2.

There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

46. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

47. Claim 24 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chin (US 5,096,554). See the abstract; col. 5:4-11; and col. 9:4-16; and Figure 3.

Allowable Subject Matter

48. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

49. The following is a statement of reasons for the indication of allowable subject matter:

Claim Rejections - 35 USC § 102

46. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

47. Claim 24 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chin (US 5,096,554). See the abstract; col. 5:4-11; and col. 9:4-16; and Figure 3.

Allowable Subject Matter

48. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

49. The following is a statement of reasons for the indication of allowable subject matter:

a) Claim 20: the combination of limitations requires the diverting to include “a mechanical switch effective to direct (i) a fragment having said selected size to enter said first branch channel, and (ii) a fragment not having said selected size to enter said second branch channel.” The claims in US 6,344,325 B1 only disclose diverting molecules using a pair of electrodes (claim 18) or by adjusting the pressure at the outlet of each branch channel (claim 19). Similarly, the claims in US 6,221,654 B1 only disclose diverting molecules using a pair of electrodes (claims 14 and 29) or by adjusting the pressure at the outlet of each branch channel (claim 15).

50. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (571) 272-1343. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Alex Noguerola
Primary Examiner

AU 1753

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